Perovskite Photodiode for Wearable Electronics

Reza Saberi Moghadam[1], Rami Ghannam[1], Hadi Heidari[1]

[1] School of Engineering, University of Glasgow, Glasgow, UK.

Photodetectors are sensing devices that have been used for a broad range electromagnetic wave sensing applications. We are currently investigating the use of photovoltaic cells for implantable and wearable applications [1] [2]. In this work, we have demonstrated the use of $CH_3NH_3PbI_{3-x}Cl_x$ perovskite materials for photo sensing applications in wearable electronic devices. Our photodetectors were fabricated from two different structures. The first involves the formation of a thin film perovskite material that is sandwiched between bottom and top contact electrodes, while the second involves using hole and electron transport layers between the bottom and top electrodes. Despite a poorer device stability, our experimental results confirmed that devices without an interlayer yield superior performance. Furthermore, AFM results show that the perovskite film formed on top of the PEDOT: PSS layer is non-uniform with more crystalline domains, while it has better surface coverage on top of bare ITO substrates [3] [4].

References

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